

Tidal Potomac PCB TMDL
Technical Advisory Committee Meeting
MWCOG
January 30, 2007

Carlton Haywood
Interstate Commission on the
Potomac River Basin



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Topics in this presentation

- 1) Review Scope, Approach, & Schedule for this TMDL
- 2) Revised Estimates of External PCB loads
 - a) A quick review of PCB loads as presented Oct 31.
 - b) What changed between Oct 31 and now
 - c) Revised loads by source category.
- 3) Questions



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1) Potomac PCB TMDL: Scope, Approach, & Schedule



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State water body impairment criteria.

Both Fish Tissue Thresholds and WQ Standards apply.

	Fish Tissue Impairment Threshold (ppb)	Water Quality Standards (ng/l)
Dist. of Col.	20	0.064
Maryland	88	0.64
Virginia	54	1.70

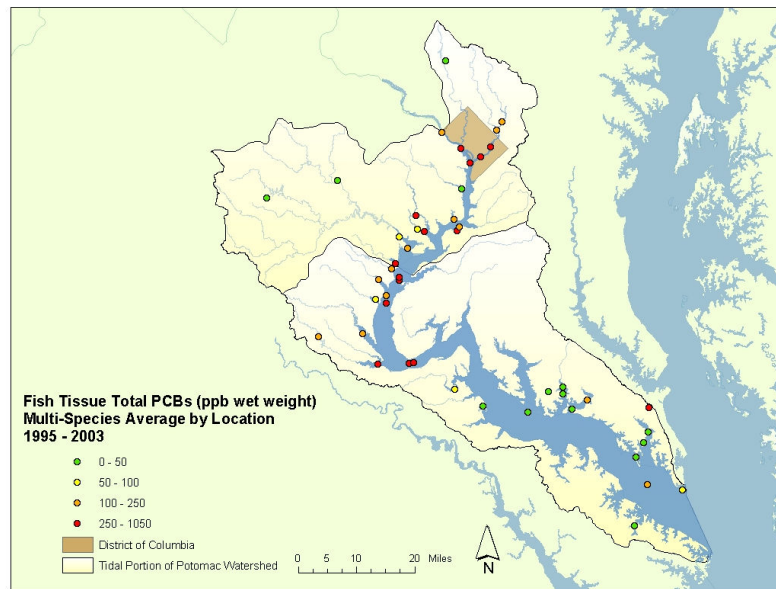
* Specific reason for 303(d) listing.



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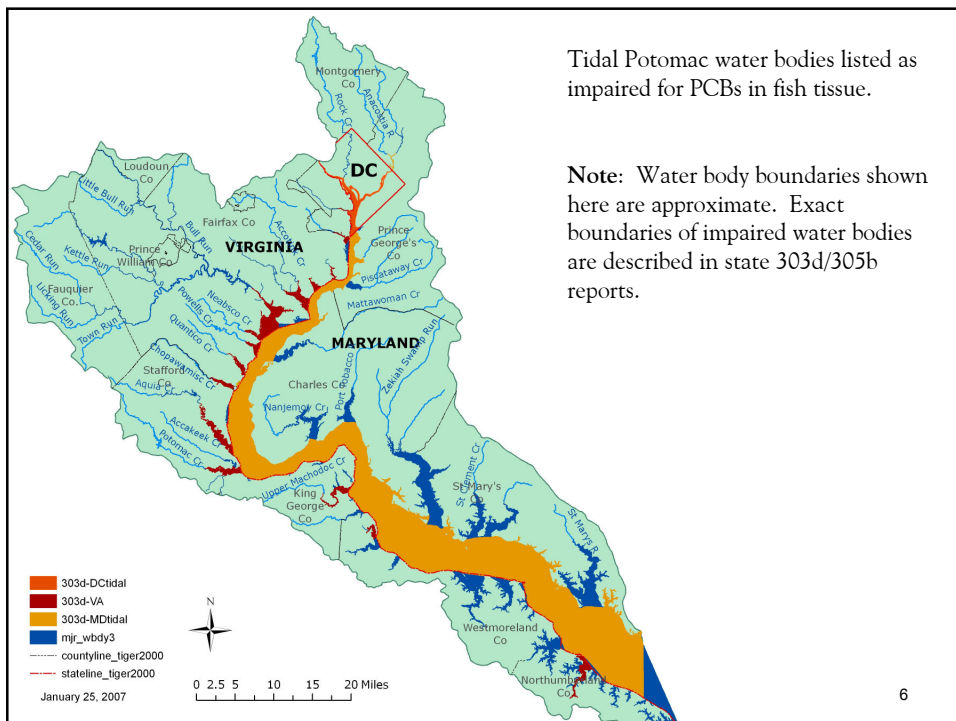
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Historical data: PCBs in Fish Tissue

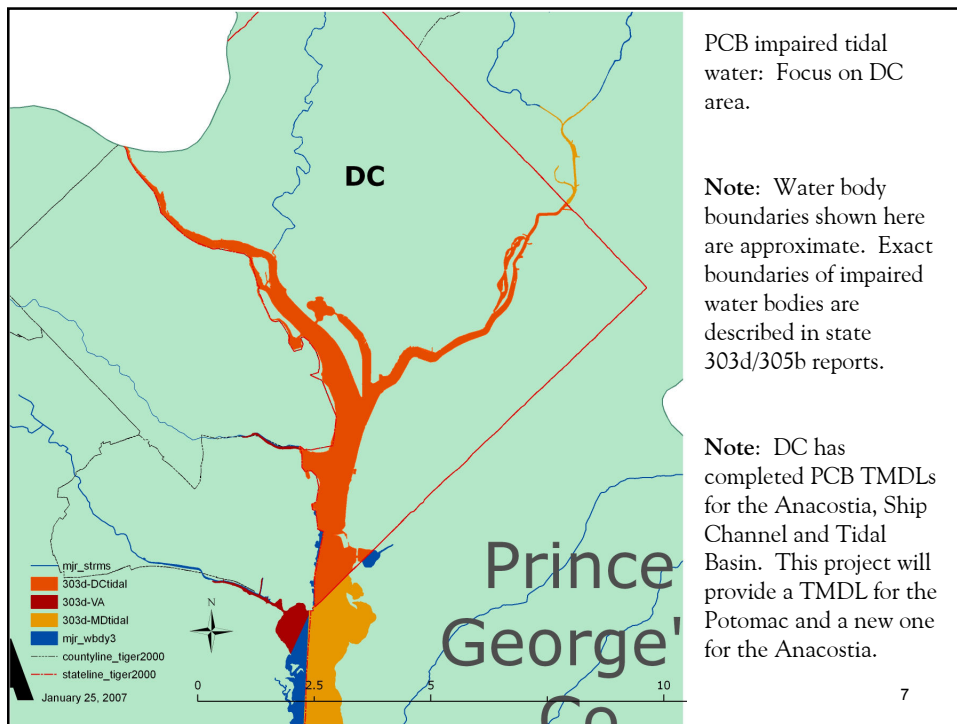


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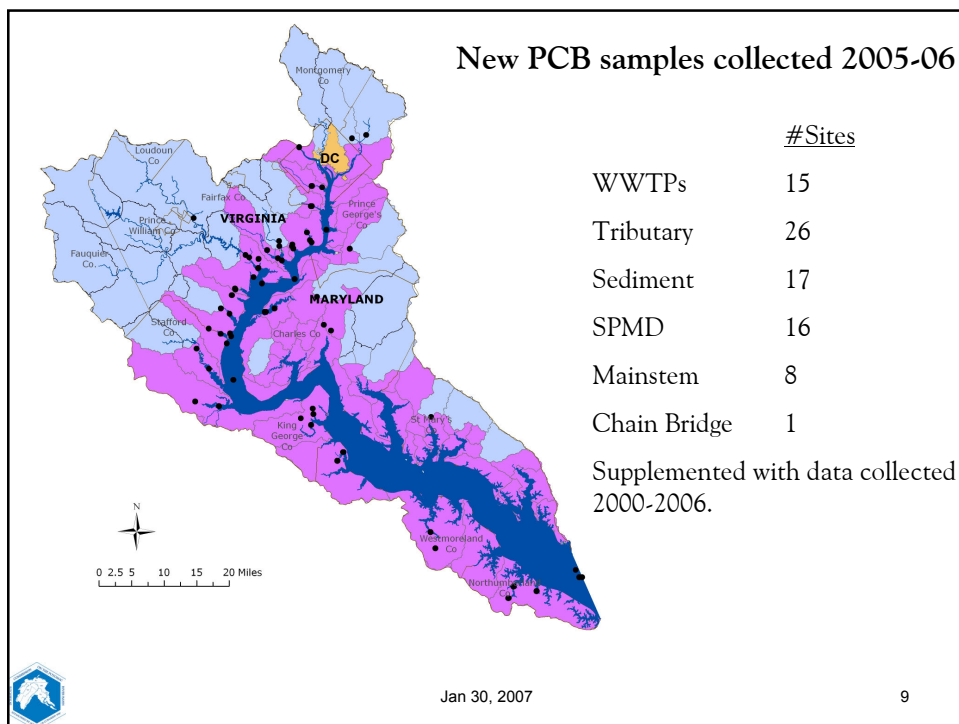


- 1) District of Columbia has a court ordered deadline of September 30, 2007 to complete their tidal Potomac PCB TMDL.
- 2) DC, MD, VA, EPA, ICPRB, and LTI working together to complete TMDL for all tidal waters by Sep., 2007, using common methodology.
- 3) Scope of project:
 - a) Collect and assess existing data sets.
 - b) Collect new samples to provide better understanding of sources.
 - c) Estimate input loads.
 - d) Build a model to simulate fate and transport of PCBs in the tidal Potomac.
 - e) Run model scenarios to determine maximum loads that can meet water quality standards and fish tissue criteria.
 - f) Write TMDL.



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TMDL Development Schedule

• Compile historical data	2005
• Select modeling framework	2005
• New PCB samples in water, sediment, & WWTPs	2005-2006
• 1 st Technical Advisory Committee (TAC) Meeting	Sep 2005
• 2 nd TAC: Intro to model and load estimation methods	Jan 23, 2006
• Hydrodynamic / Salinity Model completed	Feb 2006
• 1 st Round Public Stakeholder Meetings	Jun 2006
• 3 rd TAC: Initial estimates external PCB loads by source	Oct 31, 2006
• Interim version of PCB model	Dec 31, 2006
• Draft loading summary document	Dec 31, 2006
• 4 th TAC: Revised external PCB loads, Initial model runs	Jan 30, 2007

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TMDL Development Schedule

- Final validated PCB model Feb 23, 2007
- Meet with WWTP operators Feb 22/23
- Closing date for comments on loadings report Feb 28, 2007
- Draft report on PCB model calibration April 1, 2007
- 5th TAC: TMDL scenarios & model runs mid-April 2007
- Draft PCB TMDL to states for internal review May 1, 2007
- Final Modeling Report Jun 1, 2007
- Final draft TMDL report for public review Jun 15, 2007
- 2nd Round public stakeholder mtgs & comment period Jun 15–Aug 1, '07
- TMDL report submitted to EPA Sep 1, 2007
- EPA approval of TMDL Sep 30, 2007



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2) Revised Estimates of External PCB loads



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- **WARNING! These are draft estimates of external PCB loads.**

- a) Analysis of the sample data is continuing.
- b) Continuing to test and refine load estimation methods.

Thus, these load estimates may be revised again prior to final TMDL scenario model runs in April.



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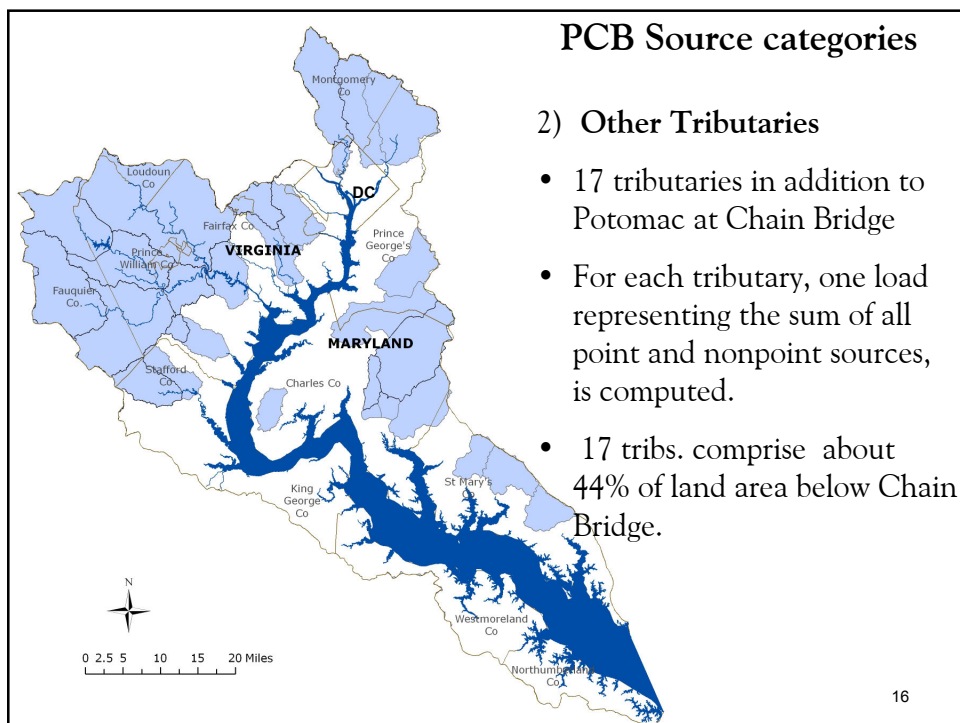
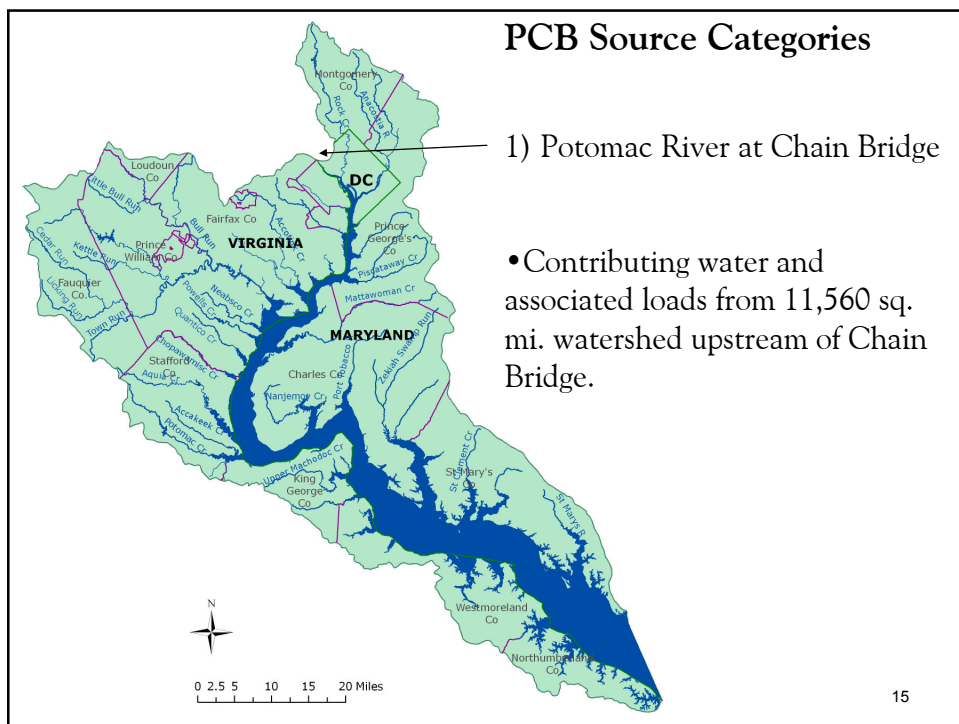
PCB External Source Categories

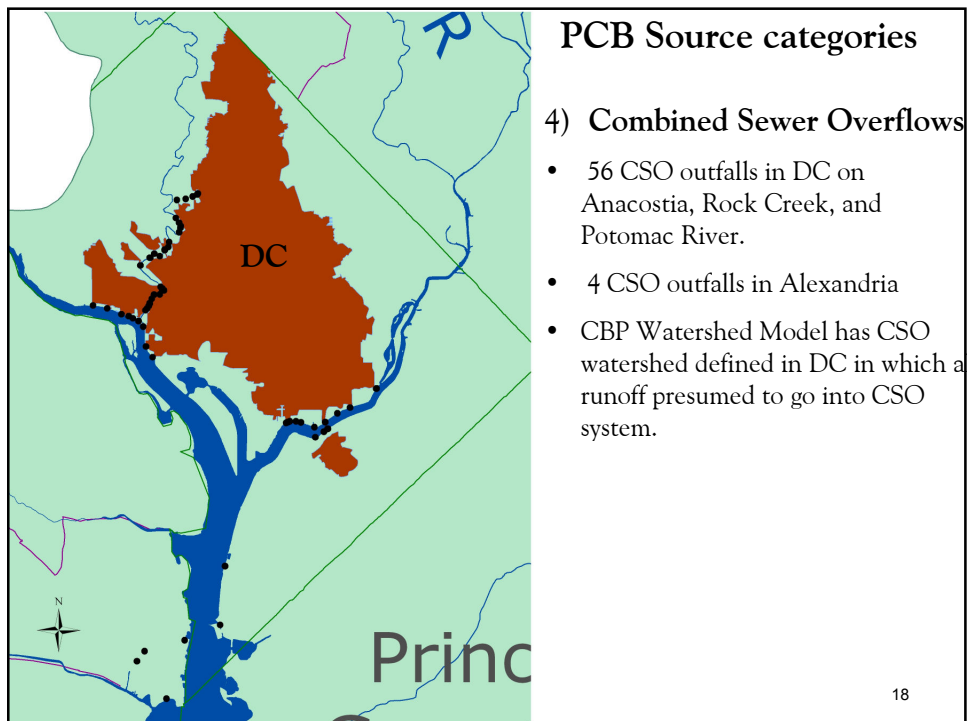
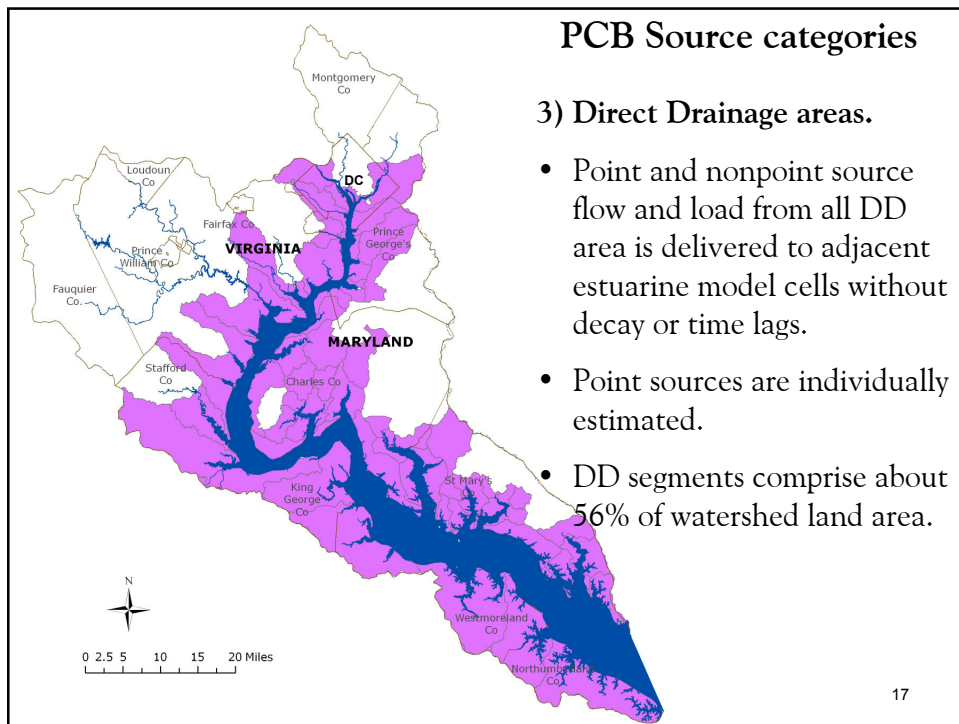
- 1) Tributary input
 - a) Potomac River
 - b) Other tributaries
- 2) Direct Drainage (Non Point Source)
- 3) Contaminated Sites
- 4) Atmospheric deposition
- 5) Point Sources
- 6) Combined Sewer Overflows (CSO)

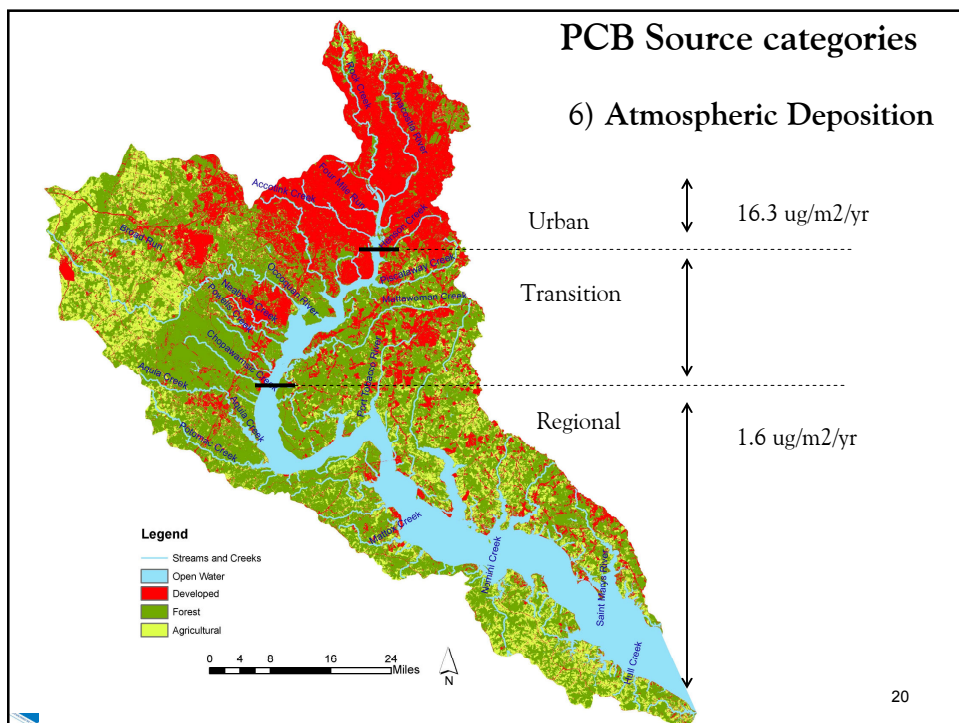
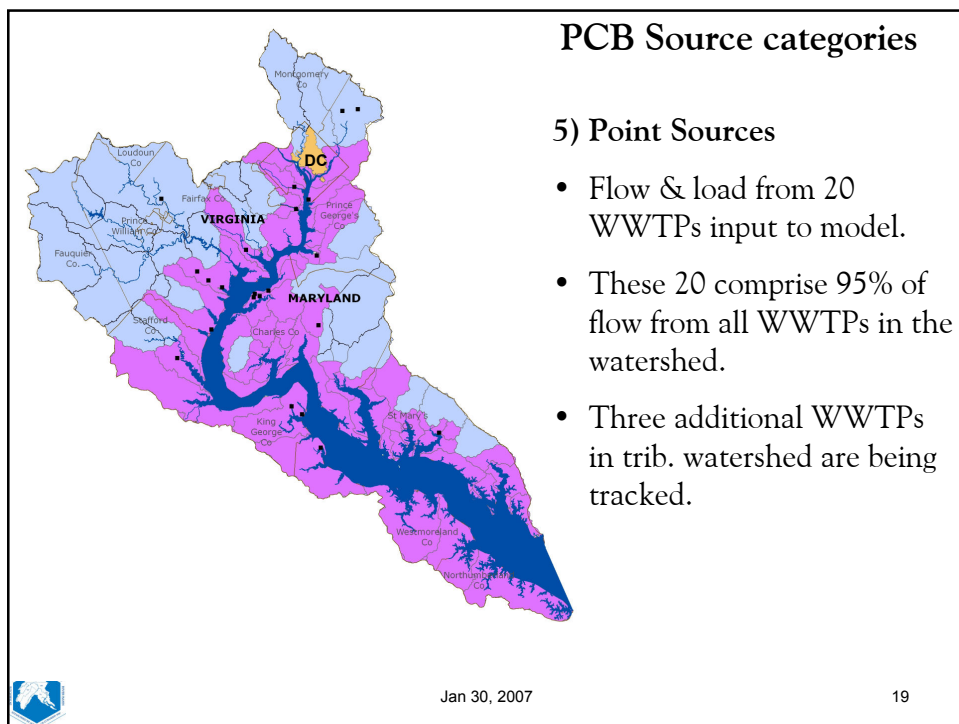


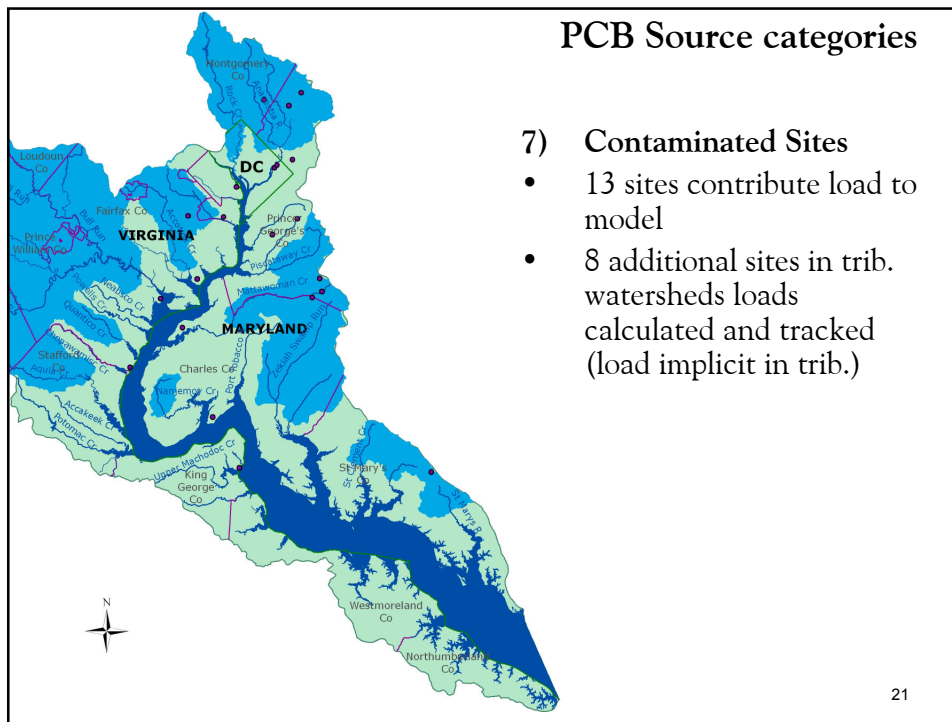
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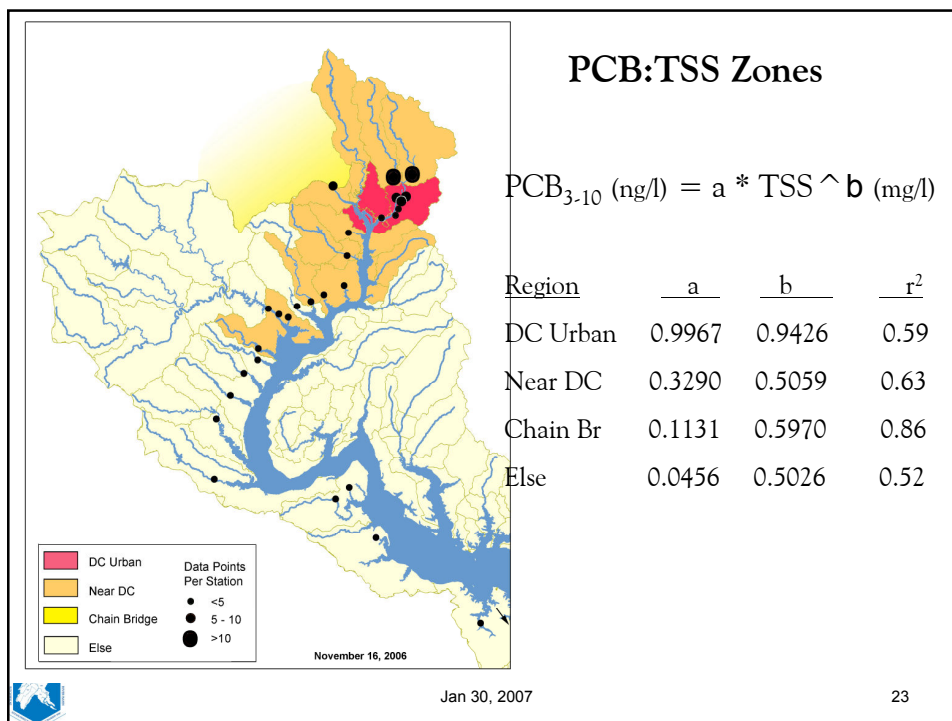
PCB Load Estimation Methods

- Potomac River at Chain Bridge, Other Tribs, Direct Drain:
 - $[PCB] = f(TSS)$, TSS and flow estimated by CBP Watershed Model.
 - Different PCB:TSS relationships depending on distance from DC.
- CSO:
 - $[PCB] = f(TSS)$, constant TSS based on median from 2002-2005 sample programs, flow simulated by MOUSE and SWMM models.
- Point Source:
 - $[PCB] =$ site specific mean of samples collected, flow based on DMRs.
- Atmos. deposition:
 - Literature based. PCB deposition at a constant rate in 3 deposition zones.
- Contaminated Sites
 - Compute annual soil loss w/ RUSLE2. Multiply soil loss by $[PCB]$ obtained from site specific soil samples.



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Initial PCB Load estimates (October 31, 2006)

(grams/year total PCB)

Potomac R @ Chain Bridge	17,500
All other Tribs.	2,000
Sum of all Direct Drain area	1,560
Combined Sewer Overflow	1,800
Point Sources (Blue Plains=816)	930
Atmospheric Deposition	3,130
Contaminated sites (20 grams total incl. those in tribs)	13
Total	26,933

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Changes in methods Oct 31-Jan 30

- Switch from total PCB to PCB₃₋₁₀ (most sources).
 - Resolve homolog recovery differences in historical data sets.
- CBP Watershed model revised flow and TSS simulation
 - Improved WM5 calibration for TSS
 - Resolve Occoquan watershed TSS anomaly.
- CBP Watershed model time series extended through calendar 2005.
 - Better fit to recent sample data.
 - Calendar 2005 hydrology more representative of long term average flow
- Add another contaminated site (Ft. Belvoir)
- New method for estimating carbon loads
 - Alternative to Watershed Model



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Revised PCB Load estimates (January 27, 2007)

Initial estimate is g/yr total PCB. Revised estimate is g/yr PCB₃₋₁₀, except atmos dep. and contam. sites, which are total PCB.

Initial estimate Revised estimate

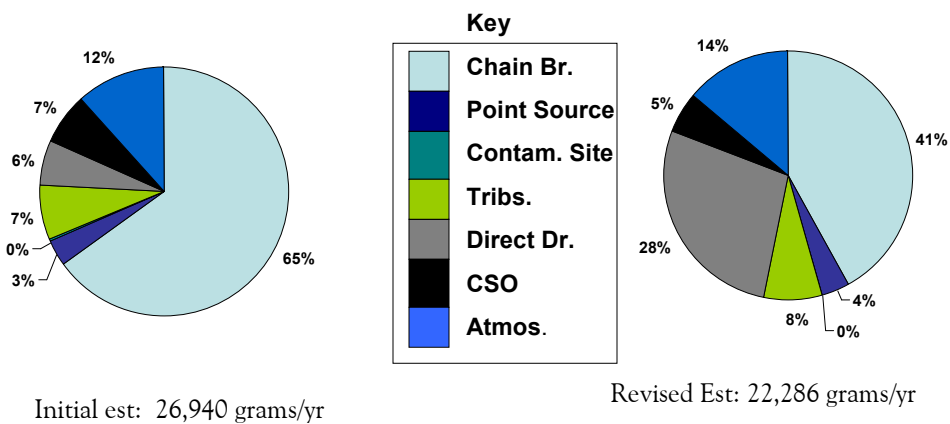
Potomac R @ Chain Bridge	17,500	9,330
All other Tribs.	2,000	1,667
Sum all Direct Drain Area	1,560	6,187
Combined Sewer Overflow	1,800	1,148
Point Sources (Blue Plains=724)	930	800
Atmospheric Deposition	3,130	3,130
Contaminated sites	13	23
Total	26,933	22,286



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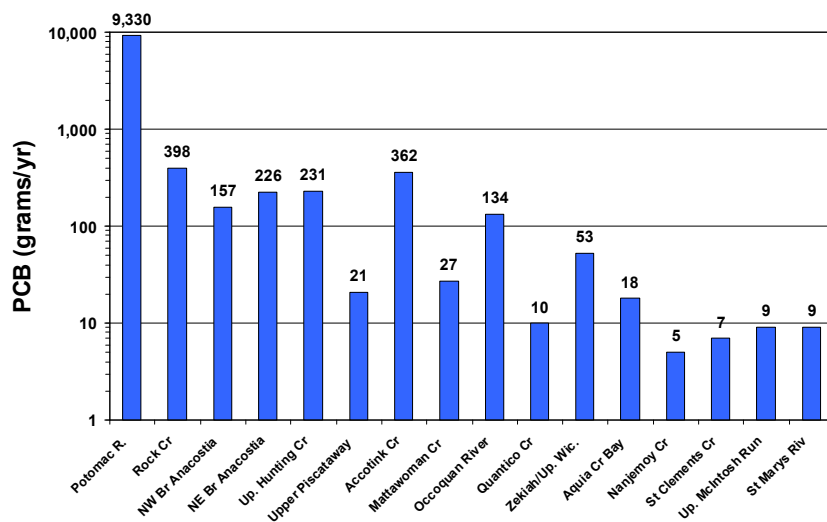
Compare PCB external loadings: Initial estimate Oct'06 vs Jan '07 revised.



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1994-2005 Avg Annual PCB3+ by Tributary



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Qualitative assessment of changes

- 1) Potomac R. less dominant, though still largest, source. Part of change due to recalibration of WM5, part due to dropping PCB homologs 1 & 2.
- 2) Potomac R., other Tribs, and Direct Drain, more variable than previously due to recalibrated TSS being more variable with annual rainfall/runoff. Range in annual PCB was mean +150% / -67%. Range in annual PCB now is + 300% / -75%.
- 3) Direct Drain areas contribute substantially more PCB as result of recalibrated TSS.
- 4) Amount of reduction due to switch to PCB₃₋₁₀ varied by source category.



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What hasn't changed

- 1) Highest loading rates (grams PCB/year from all sources) are still to be found in the upper estuary, especially in and near the District of Columbia. Result of high atmos. dep rate + CSOs + highest PCB:TSS for tribs and direct drain.
- 2) Although nonpoint sources (Potomac River, other tributaries, direct drainage, and atmos. deposition dominate in most places, and CSOs dominate in Anacostia and certain Potomac River model cells, there are scattered locations where point sources or contaminated sites contribute a substantial part of total annual load to specific PCB model cells.
- 3) Won't know what maximum allowable annual load is until have PCB model scenarios.



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Additional information about this TMDL,
including documents and copies of presentations
from this and previous meetings, can be found at

http://potomacriver.org/water_quality/pcbtml.htm



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Points of contact for the PCB TMDL

Dist of Col:	Monir Chowdhury, monir.chowdhury@dc.gov , (202)727-9367
Maryland:	Anna Soehl, ASoehl@mde.state.md.us , (410) 537-3509
Virginia:	Mark Richards, marichards@deq.virginia.gov , (804)698-4392
EPA:	Charles App, app.charles@epa.gov , (215)266-1928
ICPRB:	Carlton Haywood, chaywood@icprb.org , 301-984-1908 x105



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Questions?

- Scope, Approach, & Schedule for this TMDL
- Revised Estimates of External PCB loads



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